

WHAT IS CLAIMED IS:

- Sub A1
1. A heat shield for an under-the-hood vehicular engine component comprising three layers: an outer metal layer, an insulation layer, and an inner metal layer adapted to be positioned directly proximal to a shielded component, said insulation layer positioned intermediately between said metal layers, said layers collectively providing thermal insulation of, and reduced noise transmission from, said component, wherein at least one edge portion of said heat shield comprises outwardly flared undulations.
 2. The heat shield of claim 1, wherein said outer metal layer of said heat shield comprises a circumferential edge boundary, wherein said boundary is folded over to encase mating edges of said insulation layer and said inner metal layer.
 3. The heat shield of claim 2, wherein said circumferential edge boundary of said outer metal layer of the heat shield are folded over said mating edges to avoid sharp edges and to reinforce said heat shield structure under conditions of vibration and heat.
 4. The heat shield of claim 3 wherein said component comprises an exhaust manifold fixed to engine, and adapted to carry hot engine gases away from said engine.
 5. The heat shield of claims 3 wherein said outwardly flared undulations define protuberances spaced apart along said one edge portion of said heat shield.
 6. The heat shield of claim 4 further comprising a series of generally orthogonally disposed beads extending over the body of said shield.
 7. The heat shield of claim 6 further comprising a plurality of arcuate nodes positioned at the intersections of each of said orthogonally disposed beads.

Sub A1
cont.

8. The heat shield of claim 7 wherein said inner metal layer directly adjacent said shielded component is adapted to reflect heat back to the shielded component.

9. The heat shield of claim 8 wherein a plurality of said nodes is distributed over the body of said shield, each node having a circular shape.

10. The heat shield of claim 9 wherein said circumferential boundary edges of said outer metal layers of said heat shield are folded over said mating edges to avoid sharp edges to protect hands and fingers of an installer from contact with sharp edges.

11. A heat shield for an under-the-hood vehicular engine component comprising three layers: an outer metal layer, an insulation layer, and an inner metal layer adapted to be positioned directly proximal to the shielded component, said insulation layer positioned intermediately between said metal layers, said layers collectively providing thermal insulation of, and reduced noise transmission from, said component, and wherein at least one edge portion of said heat shield comprises outwardly flared undulations, and wherein said outwardly flared undulations define protuberances spaced apart along said one edge portion of said heat shield.

12. A heat shield for an under-the-hood vehicular engine component comprising three layers: an outer metal layer, an insulation layer, and an inner metal layer adapted to be positioned directly proximal to the shielded component, said insulation layer positioned intermediately between said metal layers, said layers collectively providing thermal insulation of, and reduced noise transmission from, said component, wherein said outer metal layer of said heat shield comprises a circumferential edge boundary, wherein said boundary is folded over to encase mating edges of said insulation layer and said inner metal layer to avoid sharp edges and to reinforce said heat shield structure under conditions of vibration and heat.